

CLAIMS

1. A positive photosensitive resin composition comprising:

- 5 (A) a positive photosensitive resin,
(B) a photoacid generator and
(C) a photosensitizer which is a benzopyran condensed ring
compound capable of increasing photosensitivity to visible
light with a wavelength of 480 nm or more.

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2. A composition according to claim 1, wherein
the positive photosensitive resin (A) is a resin having a
functional group or groups which are soluble in developers
and are blocked with an acid-unstable group or groups.

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3. A composition according to claim 2, wherein
the functional group or groups are a hydroxyl group or
groups.

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4. A composition according to claim 1, wherein
the positive photosensitive resin (A) is a carboxyl-
and/or hydroxyphenyl-containing resin (a) in combination
with an ether linkage-containing olefinic unsaturated
compound (b).

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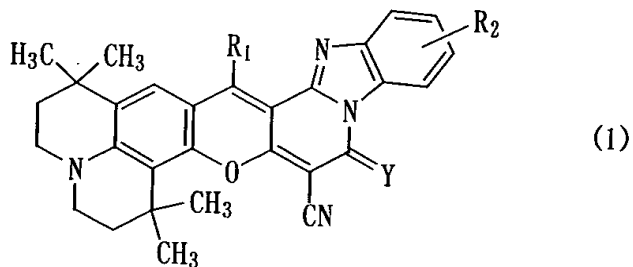
5. A composition according to claim 4, wherein the proportion of the unsaturated compound (b) is about 5 to 150 parts by weight per 100 parts by weight of the resin (a).

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6. A composition according to claim 1, wherein the proportion of the photoacid generator (B) is about 0.1 to 40 parts by weight per 100 parts by weight of the resin (A).

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7. A composition according to claim 1, wherein the photosensitizer (C) is a benzopyran condensed ring compound represented by Formula (1)



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wherein R_1 is hydrogen, halogen, cyano, trifluoromethyl, carboxyl or carboxylic acid ester, R_2 is hydrogen, alkyl, alkoxy, cyano, trifluoromethyl, sulfoxy or halogen, and Y is NH or O.

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8. A composition according to claim 1, wherein the proportion of the photosensitizer (C) is about 0.1 to 10 parts by weight per 100 parts by weight of the total amount of the resin (A) and photoacid generator (B).

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9. A composition according to claim 1 which further comprises, as a photoacid proliferating agent (D), an organic acid ester and/or a crosslinked carbocyclic compound containing a crosslinked carbocyclic skeleton which has a hydroxyl group or groups bonded to any of the crosslinked carbocyclic rings and, at a carbon atom or atoms adjacent to the hydroxyl-bearing carbon atom or atoms, a sulfonate group represented by Formula (2)

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wherein R_5 is acyl, aliphatic hydrocarbon, polycyclic aromatic hydrocarbon or a heterocyclic group.



10. A composition according to claim 1, which is an organic solvent-based resin composition.

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11. A composition according to claim 1, which is an aqueous resin composition.

12. A positive photosensitive dry film prepared by applying a positive photosensitive resin composition

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process
J.M.

according to claim 1 to a surface of support film,
followed by drying, to thereby form a positive
photosensitive resin layer.

5 13. A method of forming a pattern comprising the
steps of:

(1) applying a positive photosensitive resin composition
according to claim 1 to a substrate, followed by drying,
to form a positive photosensitive resin coating,

10 (2) irradiating the resin coating with visible light
directly or through a mask so as to obtain a desired
pattern, and

(3) removing the irradiated part of the positive
photosensitive resin coating by development to form a
15 resist pattern coating.

 14. A method of forming a pattern comprising the
steps of:

(1') attaching a positive photosensitive dry film
20 according to claim 12 to a substrate so that the
photosensitive resin layer of the dry film is in contact
with the substrate to form a positive photosensitive resin
coating, and optionally peeling off the support film of
the dry film,
25 (2) irradiating the resin coating with visible light.

directly or through a mask so as to obtain a desired pattern, and

(3') peeling off the support film of the dry film when the support film has not been peeled off, and removing the irradiated part of the positive photosensitive resin coating by development to form a resist pattern coating.

1. The first step is to identify the problem. This involves understanding the current situation and what needs to be changed.